

Notice of Allowability

Application No.

10/830,157

Examiner

Ann T. Hoang

Applicant(s)

SIBRAI, ANDREAS

Art Unit

2836

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 6/30/06.
2. ☒ The allowed claim(s) is/are 1-36.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some* c) ☐ None of the:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|--|--|
| 1. <input type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Notice of Informal Patent Application |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6. <input checked="" type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date <u>20060902</u> . |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date _____ | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9. <input type="checkbox"/> Other _____. |

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Stephen B. Ackerman (37,761) on Friday, September 1, 2006.

The application has been amended as follows:

In claim 1, line 17, following "means for" the word --providing-- is inserted.

In claim 1, line 18, following "means for" the word --providing-- is inserted.

In claim 10, line 1, following "means for" the word --providing-- is inserted.

In claim 11, line 1, following "means for" the word --providing-- is inserted.

In claim 12, line 1, following "means for" the word --providing-- is inserted.

In claim 13, line 1, following "means for" the word --providing-- is inserted.

In claim 33, line 9, following "means for" the word --providing-- is inserted.

In claim 33, line 18, following "means for" the word --providing-- is inserted.

In claim 33, line 42, following "device with" the words "the help of" are replaced with --at least--.

In claim 33, line 44, following "circuit with" the words "the help of" are replaced with --at least--.

In claim 33, line 62, following "branch with" the words "the help of" are replaced with --at least--.

In claim 33, line 69, following "calculating with" the words "the help of" are replaced with --at least--.

In claim 33, line 78, following "limitations with" the words "the help of" are replaced with --at least--.

In claim 35, lines 7-8, following "implemented with" the words "the help of" are replaced with --at least--.

In claim 36, line 8, following "device with" the words "the help of" are replaced with --at least--.

2. The following is an examiner's statement of reasons for allowance:

Regarding claims 1-20 and 34, the prior art fails to teach a means for control of said firing, said diagnostics, and said online testing having a safing sensor signal input pin, four pins for voltage sense input signals, two pins for one pair of current control output signals, one pin for a driver control output signal and a ground pin; and a means for steered supply of currents to said means for said low-side switching derived from said low voltage domain and controlled by said pair of current control output signals, in combination with the other limitations in the claims.

Regarding claim 21, the prior art fails to teach a circuit, included in a driver device for squibs, comprising an output stage configured as a serial circuit of two transistors of PMOS type and an internal current source, and two output terminal pins connected internally to the drains of a first and second FET of said output stage, in combination with the other limitations recited in the claims.

Regarding claims 22-32, the prior art fails to teach a first controlled current source with a diagnostics current control input for said driver switch diagnostics of said low-side switch and switching on in said current limited diagnostic mode performing low-side switching transistor functions for diagnostics; a second controlled current source with a firing current control input for said driver switch operating of firing for said low-side switch and switching on in said current limited firing mode performing low-side switching transistor functions for said firing; one High Side Driver (HSD) circuit block for driving said high-side switch; and one driver control signal line from said control and test unit input to said HSD circuit block, in combination with the other limitations recited in the claims.

Regarding claim 33, the prior art fails to teach implementing said high-side switching device as a single NMOS FET switch transistor; implementing said low-side switching device with at least a pair of NMOS transistors in current mirror configuration; and calculating with the help of said voltage and resistance values secure firing current values for said high-side and low-side switching devices, thus trimming and setting up said controlled driving currents to their operational necessary minimum, and thus limiting said main supply energy stored within said external storage capacitor to an optimum, in combination with the other limitations recited in the claims.

Regarding claim 35, the prior art fails to teach a high-side switch and a low-side switch connecting said squib to power supply and to ground respectively whereby said low-side switch is implemented with at least a pair of NMOS transistors in current mirror

configuration and said high-side switch is using an NMOS FET switch transistor, in combination with the other limitations in the claims.

Regarding claim 36, the prior art fails to teach implementation of said low-side switching device with at least a pair of NMOS transistors in current mirror configuration and of said high-side switching device using an NMOS FET switch transistor; implementing for said low-side switching device a current source that defines the normal diagnostic and test operations and another current source defining the firing operation thus in any case delivering controlled driving current currents; and calculating secure firing current values for said high-side and low-side switching devices, thus trimming, or setting up said controlled driving currents to their operational necessary minimum, and thus limiting said main supply energy stored within said external storage capacitor to an optimum, in combination with the other limitations recited in the claims.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ann T. Hoang, whose telephone number is 571-272-2724. The examiner can normally be reached Mondays through Fridays, 8:00 a.m. to 5:00 p.m.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Sircus, can be reached at 571-272-2800 x36. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

ATH
09/01/06



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